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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,477	09/15/2003	Ryuji Sugita	Q77477	9243
23373	7590	05/17/2004	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			UHLIR, NIKOLAS J	
			ART UNIT	PAPER NUMBER
			1773	

DATE MAILED: 05/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

477
10/661,447

Applicant(s)

THOMAS ET AL.

Examiner

Nikolas J. Uhlir

Art Unit

1773

e10

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09152003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 8-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, it is unclear what dimension the thickness of the sidewall (δ) is when the thickness of the magnetic layer (t) is greater than or equal to the depth of the recessed portions (d). As is clearly shown by figure 1, when t is less than the depth of the recessed portion, δ is the width of the portion of the magnetic layer that connects the magnetic material in the recessed portion to the magnetic material on the protrusions.

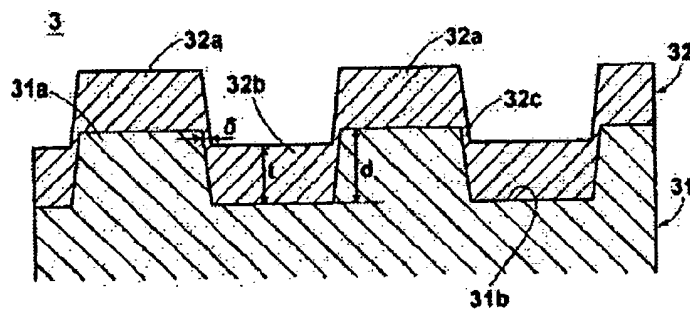


Figure 1

Art Unit: 1773

However, when t is greater than or equal to d (as is allowed by claim 1), how δ is measured is unclear. When $t \geq d$, is δ the thickness of the portion of the magnetic layer where the magnetic material on the protrusion portions and the magnetic material on the depression portions overlap, or can it be the entire width of the magnetic material filling the depression portion? Clarification is required.

Claim Interpretation

4. For the purpose of this examination, the examiner interprets δ , when $t \geq d$ to be the thickness of the portion of the magnetic layer where the magnetic material on the protrusion portions and the magnetic material on the depression portions overlap.

Claim Rejections - 35 USC § 102/103

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nagao et al. (US2001/0028964).

Art Unit: 1773

8. Claim 1 requires a master information carrier for magnetic transfer comprising a substrate having an irregularity pattern representing information to be transferred to a slave medium and a magnetic layer formed on the irregularity pattern on the substrate, wherein the improvement comprises that formula $-0.004 \leq (t-d)/d \leq 0.1$ is satisfied wherein d represents the depth of the recessed portions of the irregularity pattern and t represents the thickness of the magnetic layer formed on the recessed portions, and the magnetic layer formed on the protruding portion of the irregularity pattern and the magnetic layer formed on the recessed portions of the irregularity pattern are connected with each other.

9. Regarding these limitations, Nagao teaches a master information carrier comprising a substrate having recessed portions and elevated portions, wherein magnetic material is deposited in the recessed portions and on the elevated portions, such that the magnetic layer on the elevated portions and the recessed portions are connected (figure 2 and section 54). The depth of the recessed portions is 80-800nm, more preferably 150-600nm (section 19). The thickness of the magnetic material on the master medium is 50-500nm, more preferably 150-400nm (section 22). As is clearly shown, Nagao teaches endpoints in the preferred ranges for the depth of the recessed portions and thickness of the magnetic material that are equal to one another (the depth can be 150nm and the thickness can be 150nm). Although Nagao does not teach a specific example of a master medium where the thickness of the magnetic layer equals the depth of the recessed portion of the substrate, one of ordinary skill in the art would clearly envision such an example from Nagao's teachings. Thus, Nagao anticipates the

Art Unit: 1773

limitations of claim 1, as $t-d/d$ is zero when $t=d$. Regardless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form 150nm deep recesses and utilize a 150nm thick magnetic layer in Nagao, as Nagao explicitly teaches that this depth/thickness is acceptable.

10. Claim 2 requires $t-d/d$ to be in the range of -0.004-0.1. This limitation is met as set forth above for claim 1.

11. Claim 3 requires d to be in the range of 50-500nm. This limitation is met as set forth above for claim 1.

12. Claim 4 requires d to be in the range of 100-600nm. This limitation is met as set forth above for claim 1.

13. Claim 5 requires the substrate to be formed from a material selected from nickel, silicon, aluminum, alloys, and synthetic resin. Nagao teaches that Ni and Ni alloys are suitable for forming the substrate (section 74).

14. Claim 6 requires the magnetic layer to be formed from a material selected from the group consisting of Co, Co alloys, Fe, Fe alloy, Ni, and Ni alloys. Nagao teaches that the magnetic layer can be made from these materials (section 75).

15. Claim 7 requires the magnetic layer to be FeCo or FeCoNi. Nagao teaches that the magnetic layer can be FeCo or FeCoNi (section 75).

16. Claims 8-9 requires δ/t to b in the range of 0.01-0.5 (claim 8), more specifically 0.02-0.3. Though Nagao does not explicitly teach this requirement, it appears clear from figure 2 of Nagao that these limitations are met. Specifically, it appears from the figure that the width of the portion of the magnetic layer connecting the magnetic material in

the depression to the of the magnetic layer on the projections is less than 30% but greater than 2% the depth of the depressions.

17. Claims 1-8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ishida et al. (US6347016).

18. The limitations are claim 1 are enumerated above and for the sake of brevity will not be repeated.

19. Regarding these limitations, Ishida teaches a master information carrier comprising a substrate having depressed portions and elevated portions, wherein magnetic material is deposited in the depressed portions and on the elevated portions (see figure 4 and column 9, lines 10-31). As is clearly shown by figure 4, the magnetic material in the depressed portions is connected to the magnetic material on the elevated portions. The depressions in the substrate are 0.1-1 μ deep (column 10, lines 4-17). The thickness of the magnetic layer is 0.1-1 μ (column 10, lines 34-54). Though Ishida does not teach a specific example of a master medium wherein the depth of the protrusions is equal to the thickness of the magnetic material, one of ordinary skill in the art would readily envision such an example from Ishida's teachings. Thus, Ishida anticipates the limitations of claim 1, as $t-d/d$ is zero when $t=d$. Regardless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize .1 μ deep depressions and a .1 μ thick magnetic layer in the invention of Ishida, as Ishida explicitly teaches that this thickness/depth is suitable.

20. Claim 2 narrows the required $t-d/d$ range. This limitation is met as set forth above for claim 1 ($(t-d)/d=0$ when $t=d$).

Art Unit: 1773

21. Claims 3-4 requires d to be in the range of 50-800nm (claim 3), more specifically 100-600nm (claim 4). These limitations are met as set forth above for claim 1.

22. Claim 5 requires the substrate to be formed from a material selected from the group consisting of Ni, Si, Al, alloys, and synthetic resin. Ishida teaches that the substrate can be made from Al, Si, and polymeric materials (column 9, lines 42-55).

23. Claim 6 requires the magnetic layer to be formed from a material selected from the group consisting of Co, Co alloys, Fe, Fe alloy, Ni, and Ni alloys. Ishida teaches that the magnetic layer can be made from these materials (column 13, lines 1-15).

24. Claim 7 requires the magnetic layer to be FeCo or FeCoNi. Ishida teaches that the magnetic layer can be FeCo (column 13, lines 1-15).

25. Claims 8-9 requires δ/t to b in the range of 0.01-0.5 (claim 8), more specifically 0.02-0.3. Though Ishida does not explicitly teach this requirement, it appears clear from figure 4 of Ishida that these limitations are met. Specifically, it appears from the figure that the width of the portion of the magnetic layer connecting the magnetic material in the depression to the of the magnetic layer on the projections is less than 30% but greater than 2% the depth of the depressions.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhler whose telephone number is 571-272-1517. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J. Thibodeau can be reached on 571-272-1516. The fax phone

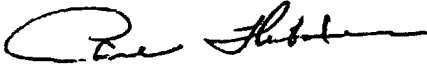
Application/Control Number: 10/661,447⁴⁷⁷
Art Unit: 1773

Page 8

number for the organization where this application or proceeding is assigned is 703-872-9306.

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